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FILE

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

IDAHO OPERATIONS OFFICE
422 WEST WASHINGTON STREET
BOISE, IDAHO 83702

July 15, 1991

MEMORANDUM

SUBJECT: NPDES Compliance Evaluation Inspection
Cyprus Thompson Creek Mine, Permit # ID002540-2

FROM: Donald E. Gibbins, IOO
NPDES Coordinator

TO: Lisa Macchio, WD-135
Idaho NPDES Compliance Coordinator

THROUGH: Vaughn Blethen, WD-135

Attached for your use and records is the documentation for the above referenced inspection.

If you have any questions or need additional information, do not hesitate to contact me at FTS 554-9505.

Attachment

cc: Cindi Hamiel, WD-135

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REGION X
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FILE NOTE

SUBJECT: NPDES Compliance Evaluation Inspection for Cyprus Thompson Creek Mine, Permit # ID002540-2

FROM: Donald E. Gibbins, IOO
NPDES Coordinator

On June 11, 1991, I conducted an NPDES compliance evaluation inspection of the Cyprus Thompson Creek Mine. I was assisted on the inspection by Joe Wallace, a new environmental engineer from this office. Joe took the pictures attached at the end of the inspection report. No samples were taken during the inspection. The Mine was represented throughout the inspection by Phillip A. (Bert) Doughty, the supervisor of environmental affairs.

The mine entrance is accessed from U.S. Highway 93 on the Squaw Creek Road, and not on the Thompson Creek Road. After checking in at the guard station, reading a list of safety rules, and signing an acknowledgement of those safety rules, we proceeded to the main office. (All driving on mine property is done on the left side of the road.) At the office, we met Bert Doughty, who took us on a tour of the mine in his vehicle.

This mine is an open pit molybdenum mine which began operation in the early 1980s. Hundreds of feet of overburden must be removed prior to ore excavation. Large waste rock dumps result from this feature. The ore is transported by trucks to a rock crusher near the pit. The crushed ore is transported by an enclosed conveyor nearly one and one-half miles to the mill building. At this location, the ore is crushed to the consistency of fine sand, and molybdenum is removed through a floatation process.

The fluids and spent ore from the flotation process flow by gravity through a pipeline to the tailings pond. The pipeline extends across the top of the tailings pond dam. At equal intervals, the liquid is separated from the spent ore and discharged behind the dam through small pipelines. The solids are deposited on top of the dam which continuously increases the height of the dam. A pump barge in the tailings pond pumps back reclaimed water as needed for the milling process. A pipeline is available to route Bruno Creek around the tailings pond.

We first drove along the conveyor toward the pit, and saw the course crushing operation. Vehicle maintenance, fuel storage, and employee shower buildings were located in this same general area. The above ground storage tanks were diked. We proceeded to the top edge of the waste rock dump in the Pat Hughes Creek basin and could see, at the base of the dump, the temporary discharge pipe from the pit dewatering operation. Further down the valley we could also see the sedimentation pond for discharge 002.

We then drove to the bottom of the pit to observe the dewatering operation. A very small pond was the source for the pumping operation, which was accomplished by two, 300 gpm pumps. Bert Doughty said they were currently pumping for 10 to 12 hours a day. Only one of the pumps was operating while we were there. In last year's inspection report, Gordon Hopson expressed concern about the pH of the pit water, which had gone from pH 7.0 - 7.1 in November, 1989, to 3.3 on May 1, 1990. During that winter, the pit was not dewatered. Photographs taken by Hopson show a large lake at the bottom of the pit during his inspection on May 29, 1990. Doughty said that when water stays in the pit for a period of time, contact with the rock face causes the pH to drop. He also said that if the water is pumped regularly, the pH is not effected. The pH of the water is currently running about 7.0.

Bert Doughty sent me a letter dated May 21, 1991, advising of a problem they had with continuing to pump the pit water to the tailings pond. Because of excessive inventories of molybdenum and a depressed market price, Cyprus decided to shut down the milling process from May 1 to November 1, 1991. During that period, Cyprus will accelerate the stripping of overburden on the northeast face of the pit. With no new tailings to continue increasing the height of the tailings pond dam, Cyprus believes the dam could be over topped. To prevent this from happening, Doughty's letter requests approval to pump the pit water to Pat Hughes Creek which flows through discharge 002. This proposal had been implemented at the time of the inspection.

We continued our tour by observing the waste rock dump in the Buckskin Creek basin. From the top edge of the dump, we could not see the sedimentation pond for discharge 002 because it was obscured by trees, but we could see the approximate location.

We then drove to the tailings pond. The pond water level was high up on the dam, especially on the far side. Without new (wet) tailings being deposited, the top layer of material on the dam had dried out, and a lot of it was blowing away with the gusty winds occurring that day. Below the tailings pond was a small pond to contain seepage from the dam. This pond was equipped with a pump station to return the seepage water to the tailings pond. The water in this pond was rust colored, indicating a pH and metals problem. Bert Doughty said that Cyprus was currently conducting

a study for the Forest Service to evaluate potential problems with acid drainage after the mine project is completed.

Below the seepage pond, we saw the outlet for the seepage pond underdrain system, and the pump station that reclaims the water for use in the milling process. The pump station is equipped with a stand-by generator for operation during power outages. Bert Doughty said that the stand-by system was run on a weekly basis to ensure its operability. The basin that collected the underdrain water had an emergency bypass line which would discharge to Bruno Creek if used. This would be prior to discharge 003. Just below the underdrain pump back system is the outlet for the diverted Bruno Creek

We then proceeded to discharge 003 on Bruno Creek. This sedimentation pond is located near the entrance to the mine property just before the creek discharges to Squaw Creek. Bruno Creek runs along the mine access road for over a mile, and then veers off along a lesser road to the point described in the previous paragraph. The access road is paved with select, crushed waste rock. Several sedimentation ponds are located along the access road on Bruno Creek above the last sedimentation pond and discharge point.

Next we drove to discharges 002 and 003, which are accessed by taking the Thompson Creek Road from U.S. Highway 93. These facilities are similar, with one sedimentation pond and a concrete outlet structure. The outlet structure includes a 90 degree V-notch weir, automatic depth measurement, and a continuous flow recorder. Bert Doughty said that the recorders were checked weekly against a permanent depth gauge mounted on the basin wall. While at discharge 002, we drove up the creek to observe the discharge from the pit dewatering operation. The rocks around the discharge appeared to be more rust colored than the surrounding rocks. This might indicate a depressed pH level in the water being discharged from the pit.

Upon returning to the office, we observed their record keeping system and discussed other checklist items. At the end of these discussions, we completed the inspection and left the mine site. Attached are the inspection checklist with photographs showing most of the items mentioned in this file note.

The only area of concern noted during the inspection was the acceptability of discharging the pit water to Pat Hughes Creek. The week prior to the inspection, I wrote a draft letter for the Regional Office to send in response to the letter from the mine (see page 2, third paragraph), but no response has been made to Cyprus yet.

Attachment

United States Environmental Protection Agency
Washington, D. C. 20460

EPA NPDES Compliance Inspection Report

Section A: National Data System Coding

Transaction Code	NPDES	yr/mo/day	Inspection Type	Inspector	Fac Type
1 N 2 5	3 I D 0 0 2 5 4 0 Z 11	12 9 1 0 6 1 1 17	18 C	19 R	20 2

Remarks

21 66

Reserved	Facility Evaluation Rating	BI	QA	Reserved	
67 69	70 3	71 N	72 N	73 74	75 80

Section B: Facility Data

Name and Location of Facility Inspected	Entry Time	Permit Effective Date
CYPRUS THOMPSON CREEK MINE CLAYTON, IDAHO (IN NEARBY MOUNTAINS)	9:30 ☒ AM ☐ PM	8/1/88
	Exit Time/Date 3:20 P 6/11/91	Permit Expiration Date 8/2/93

Name(s) of On-Site Representative(s)	Title(s)	Phone No(s)
PHILLIP A. (BERT) DOUGHTY	SUPERVISOR ENVIRONMENTAL AFFAIRS	208-838-2200

Name, Address of Responsible Official	Title	
?	Phone No.	Contacted ☐ Yes ☒ No

Section C: Areas Evaluated During Inspection

(S = Satisfactory, M = Marginal, U = Unsatisfactory, N = Not Evaluated)

S	Permit	S	Flow Measurement	N	Pretreatment	S	Operations & Maintenance
S	Records/Reports	N	Laboratory	N	Compliance Schedules	N	Sludge Disposal
S	Facility Site Review	S	Effluent/Receiving Waters	S	Self-Monitoring Program	N	Other:

Section D: Summary of Findings/Comments *(Attach additional sheets if necessary)*

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Telephone	Date
DONALD E. GIBBINS Donald E. Gibbins	EPA / I00 / 208-334-9505	7/10/91
Signature of Reviewer	Agency/Office	Date

Regulatory Office Use Only

Action Taken	Date	Compliance Status
		☐ Noncompliance ☐ Compliance

INSTRUCTIONS

Section A: National Data System Coding *(i.e., PCS)*

Column 1: Transaction Code: Use N, C, or D for New, Change, or Delete. All inspections will be *new* unless there is an error in the data entered.

Columns 3-11: NPDES Permit No. Enter the facility's NPDES permit number. *(Use the Remarks columns to record the State permit number, if necessary.)*

Columns 12-17: Inspection Date. Insert the date entry was made into the facility. Use the year/month/day format (e.g., 82/06/30 = June 30, 1982).

Column 18: Inspection Type. Use one of the codes listed below to describe the type of inspection:

A — Performance Audit
B — Biomonitoring
C — Compliance Evaluation
D — Diagnostic
E — Corps of Engrs Inspection
L — Enforcement Case Support
P — Pretreatment
R — Reconnaissance Inspection
S — Compliance Sampling
X — Toxic Sampling

Column 19: Inspector Code. Use one of the codes listed below to describe the *lead agency* in the inspection.

C — Contractor or Other Inspectors *(Specify in Remarks columns)*
E — Corps of Engineers
J — Joint EPA/State Inspectors—EPA lead
N — NEIC Inspectors
R — EPA Regional Inspector
S — State Inspector
T — Joint State/EPA Inspectors—State lead

Column 20: Facility Type. Use one of the codes below to describe the facility.

1 — Municipal. Publicly Owned Treatment Works (POTWs) with 1972 Standard Industrial Code (SIC) 4952.
2 — Industrial. Other than municipal, agricultural, and Federal facilities.
3 — Agricultural. Facilities classified with 1972 SIC 0111 to 0971.
4 — Federal. Facilities identified as Federal by the EPA Regional Office.

Columns 21-66: Remarks. These columns are reserved for remarks at the discretion of the Region.

Column 70: Facility Evaluation Rating. Use information gathered during the inspection (regardless of inspection type) to evaluate the quality of the facility self-monitoring program. Grade the program using a scale of 1 to 5 with a score of 5 being used for very reliable self-monitoring programs, 3 being satisfactory, and 1 being used for very unreliable programs.

Column 71: Biomonitoring Information. Enter D for static testing. Enter F for flow through testing. Enter N for no biomonitoring.

Column 72: Quality Assurance Data Inspection. Enter Q if the inspection was conducted as followup on quality assurance sample results. Enter N otherwise.

Columns 73-80: These columns are reserved for regionally defined information.

Section B: Facility Data

This section is self-explanatory.

Section C: Areas Evaluated During Inspection

Indicate findings (S, M, U, or N) in the appropriate box. Use Section D and additional sheets as necessary. Support the findings, as necessary, in a brief narrative report. Use the headings given on the report form (e.g., Permit, Records/Reports) when discussing the areas evaluated during the inspection. The heading marked "Other" may include activities such as SPCC, BMP's, and multimedia concerns.

Section D: Summary of Findings/Comments

Briefly summarize the inspection findings. This summary should abstract the pertinent inspection findings, not replace the narrative report. Reference a list of attachments, such as completed checklists taken from the NPDES Compliance Inspection Manuals and pretreatment guidance documents, including effluent data when sampling has been done. Use extra sheets as necessary.

VERIFICATIOI RECORDKEEPING, AND REPORTI EVALUATION CHECKLIST

A. PERMIT VERIFICATION

Mailing Address:

P.O. Box 62
CLAYTON, IDANO 83227

Brief Facility Description:

Molybdenum open pit mine with milling operation. Permitted discharges are three sedimentation ponds, two in drainages below waste rock dumps and one in drainage below a tailings pond. No treatment at ponds besides sedimentation.

(Yes) No N/A	1.	Inspection observations verify information contained in permit.
(Yes) No N/A	2.	Current copy of permit on-site.
(Yes) No N/A	3.	Correct name and mailing address of permittee.
(Yes) No N/A	4.	Facility as described in permit.
(Yes) No N/A	5.	Notification given to EPA/State of new, different, or increased discharges.
Yes No (N/A)	6.	Accurate records of influent volume maintained, when appropriate.
(Yes) No N/A	7.	Number and location of discharge points as described in permit.
(Yes) No N/A	8.	Name and location of receiving waters correct.
(Yes) No N/A	9.	All discharges permitted.
Yes No (N/A)	10.	Federal Construction Grant funds used to build plant.

B. RECORDKEEPING AND REPORTING EVALUATION

(Yes) No N/A	1.	Records and reports maintained as required by permit.
(Yes) No N/A	2.	All required information available, complete, and current.
(Yes) No N/A	3.	Information maintained for 3 years.
Yes No N/A	4.	Analytical results consistent with data reported on DMRs.
	5.	Sampling and analyses data adequate and include:
(Yes) No N/A		a. Dates, times, and location of sampling
(Yes) No N/A		b. Name of individual performing sampling
(Yes) No N/A		c. Analytical methods and techniques
(Yes) No N/A		d. Results of analyses and calibration
(Yes) No N/A		e. Dates of analyses
(Yes) No N/A		f. Name of person performing analyses
(Yes) No N/A		g. Instantaneous flow at grab sample stations.
	6.	Monitoring records adequate and include:
(Yes) No N/A		a. Flow, pH, DO, etc., as required by permit
(Yes) No N/A		b. Monitoring charts kept for 3 years
(Yes) No N/A		c. Flowmeter calibration records kept.
(Yes) No N/A	7.	Laboratory equipment calibration and maintenance records adequate. pH & turbidity meters

VERIFICATION, RECORDKEEPING, AND REPORTING EVALUATION CHECKLIST (Continued)

	8. Plant records* adequate and include:
Yes No N/A	a. O&M Manual
Yes No N/A	b. "As-built" engineering drawings
Yes No N/A	c. Schedules and dates of equipment maintenance repairs
Yes No N/A	d. Equipment supplies manual
Yes No N/A	e. Equipment data cards.
	* Required only for facilities built with Federal construction grant funds.
	9. Pretreatment records adequate and include inventory of industrial waste contributors, including:
Yes No N/A	a. Monitoring data
Yes No N/A	b. Inspection reports
Yes No N/A	c. Compliance status records
Yes No N/A	d. Enforcement actions.

C. COMPLIANCE SCHEDULE STATUS REVIEW

Yes No N/A	1. Permittee is meeting compliance schedule.
Yes No N/A	2. Permittee has obtained necessary approvals to begin construction.
Yes No N/A	3. Financing arrangements complete.
Yes No N/A	4. Contracts for engineering services executed.
Yes No N/A	5. Design plans and specifications completed.
Yes No N/A	6. Construction begun.
Yes No N/A	7. Construction on schedule.
Yes No N/A	8. Equipment acquisition on schedule.
Yes No N/A	9. Construction completed.
Yes No N/A	10. Startup begun.
Yes No N/A	11. Permittee requested an extension of time.
Yes No N/A	12. Permittee met compliance schedule.

FACILITY SITE REVIEW CHECKLIST

A. OPERATION AND MAINTENANCE EVALUATION

FLOW RECORDERS & SEEPAGE POND UNDERDRAIN PUMP BACK STATION ONLY

Yes No N/A	1.	Treatment units properly operated and maintained.
Yes No N/A	2.	Standby power or other equivalent provision provided.
Yes No N/A	3.	Adequate alarm system for power or equipment failures available.
	4.	Sludge disposal procedures appropriate:
Yes No N/A		a. Disposal of sludge according to regulations
Yes No N/A		b. State approval for sludge disposal received.
Yes No N/A	5.	All treatment units, other than backup units, in service. Sedimentation ponds only treatment
Yes No N/A	6.	Procedures for facility operation and maintenance followed.
Yes No N/A	7.	Sufficient sludge disposed of to maintain treatment process equilibrium.
Yes No N/A	8.	Organizational Plan (chart) for operation and maintenance provided.
Yes No N/A	9.	Operating schedules established.
Yes No N/A	10.	Emergency plan for treatment control established.
	11.	Maintenance record system exists and includes:
Yes No N/A		a. As-built drawings
Yes No N/A		b. Shop drawings
Yes No N/A		c. Construction specifications
Yes No N/A		d. Maintenance history
Yes No N/A		e. Maintenance costs
Yes No N/A		f. Repair history
Yes No N/A		g. Records of equipment repair and timely return to service.
Yes No N/A	12.	Adequate number of qualified operators on-hand.
Yes No N/A	13.	Established procedures available for training new operators.
Yes No N/A	14.	Adequate spare parts and supplies inventory maintained.
Yes No N/A	15.	Instruction files kept for operation and maintenance of each item of major equipment.
Yes No N/A	16.	Operation and maintenance manual available.
Yes No N/A	17.	Regulatory agency notified of bypassing. (Dates _____)
	18.	
Yes No N/A		a. Hydraulic overflows and/or organic overloads experienced.
Yes No N/A		b. Untreated bypass discharge occurs during power failure.
Yes No N/A		c. Untreated overflows occurred since last inspection. Reason: _____
Yes No N/A		d. Flows observed in overflow or bypass channels.
Yes No N/A		e. Checking for overflows performed routinely.
Yes No N/A		f. Overflows reported to EPA or to the appropriate State agency as specified in the permit.

FACILITY SITE REVIEW CHECKLIST
(Continued)

B. SAFETY EVALUATION

Yes (No) N/A	1. Undiked oil/chemical storage tanks used at facility.
(Yes) No N/A	2. Up-to-date equipment repair records maintained.
Yes No (N/A)	3. Dated tags show out-of-service equipment.
(Yes) No N/A	4. Routine and preventive maintenance scheduled/performed on time.
Yes No (N/A)	5. Personal protective clothing provided (safety helmets, ear protectors, goggles, gloves, rubber boots with steel toes, eyewashes in labs).
	6. Safety devices readily available:
Yes No N/A	a. Fire extinguishers
Yes No N/A	b. Oxygen deficiency/explosive gas indicator
Yes No N/A	c. Self-contained breathing apparatus near entrance to chlorine room
Yes No N/A	d. Safety harness
Yes No N/A	e. First aid kits
Yes No N/A	f. Ladders to enter manholes or wetwells (fiberglass or wooden for electrical work)
Yes No N/A	g. Traffic control cones
Yes No N/A	h. Safety buoy at activated sludge plants
Yes No N/A	i. Life preservers for lagoons
Yes No N/A	j. Fiberglass or wooden ladder for electrical work
Yes No N/A	k. Portable crane/hoist.
(Yes) No N/A	7. Plant has general safety structures such as rails around or covers over tanks, pits, or wells.
Yes No N/A	8. Emergency phone numbers listed.
(Yes) No N/A	9. Plant is generally clean, free from open trash areas.
Yes No (N/A)	10. Portable hoists, for equipment removal, available.
Yes No (N/A)	11. All plant personnel immunized for typhoid and tetanus.
(Yes) No N/A	12. No cross connections exist between a potable water supply and nonpotable source.
Yes No (N/A)	13. Gas/explosion controls such as pressure-vacuum relief values, no smoking signs, explosimeters, and drip traps present near anaerobic digesters, enclosed screening or degritting chambers, and sludge-piping or gas-piping structures.
(Yes) No N/A	14. All electrical circuitry enclosed and identified.
(Yes) No N/A	15. Personnel trained in electrical work to be performed as well as safety procedures.
	16. Chlorine safety:
Yes No N/A	a. NIOSH-approved 30-minute air pack
Yes No N/A	b. All standing chlorine cylinders chained in place
Yes No N/A	c. All personnel trained in the use of chlorine
Yes No N/A	d. Chlorine repair kit available
Yes No N/A	e. Chlorine leak detector tied into plant alarm system

FACILITY SITE REVIEW CHECKLIST
(Continued)

Yes No N/A	f. Ventilation fan with an outside switch
Yes No N/A	g. Posted safety precautions.
Yes No N/A	17. Facility has complied with the six employer responsibilities for the Worker Right-to-Know Law (P.A. 83-240).
Yes No N/A	18. Emergency Action Plan on file with local fire department and appropriate emergency agency.
Yes No N/A	19. Laboratory safety devices (eyewash and shower, fume hood, proper labeling and storage, pipette suction bulbs) available.
Yes No N/A	20. Warning signs (no smoking, high voltage, non potable water, chlorine hazard, watch-your-step, and exit) posted.

PERMITTEE SAMPLING INSPECTION CHECKLIST

A. PERMITTEE SAMPLING EVALUATION

Yes No N/A	1. Samples taken at sites specified in permit.
Yes No N/A	2. Locations adequate for representative samples.
Yes No N/A	3. Flow proportioned samples obtained when required by permit.
Yes No N/A	4. Sampling and analysis completed on parameters specified by permit.
Yes No N/A	5. Sampling and analysis done in frequency specified by permit.
Yes No N/A	6. Permittee uses method of sample collection required by permit. Required method: Grab If not, method being used is: ( ) Grab ( ) Manual composite ( ) Automatic composite
	7. Sample collection procedures adequate:
Yes No N/A	a. Samples refrigerated during compositing
Yes No N/A	b. Proper preservation techniques used
Yes No N/A	c. Containers and sample holding times before analyses conform to 40 CFR Part 136.3
Yes No N/A	d. Samples analyzed in timeframe needed (same day, etc.).
Yes No N/A	8. Monitoring and analyses performed more often than required by permit. If so, results reported in permittee's self-monitoring report.
Yes No N/A	9. Samples contain chlorine.
Yes No N/A	10. Contract laboratory used for sample analysis.
Yes No N/A	11. POTW collects samples from industrial users in pretreatment program.

B. SAMPLING INSPECTION PROCEDURES AND OBSERVATIONS

NA

Yes No N/A	1. Grab samples obtained.
Yes No N/A	2. Composite sample obtained. Compositing frequency:_____ Preservation:_____
Yes No N/A	3. Sample refrigerated during compositing.
Yes No N/A	4. Flow proportioned sample obtained.
Yes No N/A	5. Sample obtained from facility sampling device.
Yes No N/A	6. Sample representative of volume and nature of discharge.
Yes No N/A	7. Sample split with permittee.
Yes No N/A	8. Chain-of-custody procedures employed.
Yes No N/A	9. Samples collected in accordance with permit.
Yes No N/A	10. Excessive foam, grease, floating solids observed at the outfall.

FLOW MEASUREMENT INSPECTION CHECKLIST

A. GENERAL

Yes No N/A	1. a.	Primary flow measuring device properly installed and maintained.
Yes No N/A	b.	Flow measured at each outfall? Number of outfalls? 3
Yes No N/A	c.	Is there a straight length of pipe or channel before and after the flowmeter of at least 5 to 20 diameters?
Yes No N/A	d.	If a magnetic flowmeter is used, are there sources of electric noise in the near vicinity?
Yes No N/A	e.	Is the magnetic flowmeter properly grounded?
Yes No N/A	f.	Is the full pipe requirement met?
Yes No N/A	2. a.	Flow records properly kept.
Yes No N/A	b.	All charts maintained in a file.
Yes No N/A	c.	All calibration data entered into a log book. — or charts
Yes No N/A	3.	Actual discharged flow measured.
Yes No N/A	4.	Effluent flow measured after all return lines.
Yes No N/A	5.	Secondary instruments (totalizers, recorders, etc.) properly operated and maintained.
Yes No N/A	6.	Spare parts stocked.
Yes No N/A	7.	Effluent loadings calculated using effluent flow. — concentration limits

B. FLUMES

NA

Yes No N/A	1.	Flow entering flume reasonably well-distributed across the channel and free of turbulence, boils, or other disturbances.
Yes No N/A	2.	Cross-sectional velocities at entrance relatively uniform.
Yes No N/A	3.	Flume clean and free of debris or deposits.
Yes No N/A	4.	All dimensions of flume accurate and level.
Yes No N/A	5.	Side walls of flume vertical and smooth.
Yes No N/A	6.	Sides of flume throat vertical and parallel.
Yes No N/A	7.	Flume head being measured at proper location.
Yes No N/A	8.	Measurement of flume head zeroed to flume crest.
Yes No N/A	9.	Flume properly sized to measure range of existing flow.
Yes No N/A	10.	Flume operating under free-flow conditions over existing range of flows.

FLOW MEASUREMENT INSPECTION CHECKLIST
(Continued)

B. FLUMES (Continued)

Yes No N/A	11. Flume submerged under certain flow conditions.
Yes No N/A	12. Flume operation invariably free-flow.

C. WEIRS

	1. What type of weir is being used? 2 – 90° V-notch, 1 – rectangular
Yes No N/A	2. Weir exactly level.
Yes No N/A	3. Weir plate plumb and its top and edges sharp and clean
Yes No N/A	4. Downstream edge of weir is champered at 45°.
Yes No N/A	5. Free access for air below the nappe of the weir.
Yes No N/A	6. Upstream channel of weir straight for at least four times the depth of water level and free from disturbances.
Yes No N/A	7. Distance from sides of weir to side of channel at least 2H.
Yes No N/A	8. Area of approach channel at least (8 x nappe area) for upstream distance of 15H.
Yes No N/A	9. If not, is velocity of approach too high?
Yes No N/A	10. Head measurements properly made by facility personnel.
Yes No N/A	11. Leakage does not occur around weir.
Yes No N/A	12. Proper flow tables used by facility personnel.

D. OTHER FLOW DEVICES

NA

	1. Type of flowmeter used:
	2. What are the most common problems that the operator has had with the flowmeter?
	3. Measured wastewater flow: _____ mgd; Recorded flow: mgd; Error %

E. CALIBRATION AND MAINTENANCE

Yes No N/A	1. Flow totalizer properly calibrated.
	2. Frequency of routine inspection by proper operator: /day. 1/week
	3. Frequency of maintenance inspections by plant personnel: /year.
Yes No N/A	4. Flow meter calibration records kept. Frequency of flow meter calibration: 4 /month.
Yes No N/A	5. Flow measurement equipment adequate to handle expected ranges of flow rates.
Yes No N/A	6. Calibration Frequency Adequate

LABORATORY QUALITY ASSURANCE CHECKLIST

NA

A. GENERAL

Yes No N/A	1. Written laboratory QA manual is available.

B. LABORATORY PROCEDURES

Yes No N/A	1. EPA-approved analytical testing procedures used and on-hand. (written)
Yes No N/A	2. If alternate analytical procedures used, proper approval obtained.
Yes No N/A	3. Calibration and maintenance of instruments and equipment satisfactory.
Yes No N/A	4. QC procedures used.
Yes No N/A	5. QC procedures adequate.
	6. Duplicate samples analyzed % of time.
	7. Spiked samples used % of time.
Yes No N/A	8. Commercial laboratory used. Name _____ Address _____ Contact _____ Phone _____ Certification # _____

C. LABORATORY FACILITIES AND EQUIPMENT

Yes No N/A	1. Proper grade laboratory pure water available for specific analysis.
Yes No N/A	2. Dry, uncontaminated, compressed air available.
Yes No N/A	3. Fume hood sufficiently ventilated.
Yes No N/A	4. Laboratory sufficiently lighted.
Yes No N/A	5. Adequate electrical sources available.
Yes No N/A	6. Instruments/equipment in good condition.
Yes No N/A	7. Written requirements for daily operation of instruments available.
Yes No N/A	8. Standards and appropriate blanks available to perform daily check procedures.
Yes No N/A	9. Written troubleshooting procedures for instruments available.
Yes No N/A	10. Schedule for required maintenance exists.
Yes No N/A	11. Proper volumetric glassware used.
Yes No N/A	12. Glassware properly cleaned.
Yes No N/A	13. Standard reagents and solvents properly stored.
Yes No N/A	14. Working standards frequently checked.
Yes No N/A	15. Standards discarded after recommended shelf-life has expired.
Yes No N/A	16. Background reagents and solvents run with every series of samples.